

**MASTER SOLICITATION FOR FINANCIAL
ASSISTANCE APPLICATIONS
NO. DE-PS26-03NT41719-0**



**INNOVATIVE WATER MANAGEMENT TECHNIQUES
AND CONCEPTS FOR COAL-FIRED ELECTRIC UTILITY
BOILERS**

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**ISSUING OFFICE:
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NATIONAL ENERGY TECHNOLOGY LABORATORY
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PITTSBURGH, PA 15236-0940**

**ISSUE DATE: DECEMBER 16, 2002
APPLICATION DUE DATE: FEBRUARY 14, 2003**



**Information regarding this solicitation is available on the
Department of Energy, Industry Interactive Procurement System (IIPS)
web site at: <http://e-center.doe.gov>**

SECTION I - TECHNICAL REQUIREMENTS

1.1 SUMMARY (MAR 2001)

The Department of Energy (DOE), National Energy Technology Laboratory (NETL) is seeking applications for “Innovative Water Management Technologies and Concepts for Coal-Fired Electric Utility Boilers” through issuance of Financial Assistance Solicitation DE-PS26-03NT41719-0. This solicitation focuses on four areas of interest related to electric utilities and water. The intent of the solicitation is to serve to ensure the continued availability of low-cost electricity from coal while meeting growing demands for clean, affordable fresh water.

1.2 BACKGROUND INFORMATION (JAN 2000)

Electric utility boilers are the second largest user of water in the United States, ranking only slightly behind irrigation in terms of total annual water use (*USGS, Circular 1200, 1998*). The majority of the water used by power plants is for cooling. The steam cycle requires a large amount of water to condense the low-pressure steam from the turbine. Recent regulations proposed under Section 316(b) of the Clean Water Act to protect against the impingement and entrainment of aquatic organisms in cooling systems could restrict the amount of water that power plants can withdraw for cooling and/or require the installation of new intake structure technology. Retrofitting from once-through cooling systems to recirculating cooling towers can negatively impact plant efficiency due to increased turbine back pressure. Power plant operations can also be disrupted due to the colonization of Zebra mussels and other types of bio-fouling on cooling water intake grates and screens.

Water quality issues will also continue to receive attention in terms of coal power systems. Coal utilization byproducts (CUBs) such as scrubber solids and fly ash must be managed properly in order that all current and future surface and groundwater regulations are met. Concerns about the fate of mercury, arsenic, and other trace metals in CUB leachates could negatively impact the commercial use and disposal of these materials. More stringent control of air emissions under the Clean Air Act could result in cross-media transfer of pollutants from air to water. For example, pending mercury regulations could bring about the need for additional monitoring, processing, and treatment of scrubber liquors and other aqueous streams associated with air pollution control equipment. In addition, coal pile runoff and other plant-wide discharges may come under further scrutiny in response to future Clean Water Act and Safe Drinking Water Act requirements.

DOE-NETL held a workshop in July 2002 with key stakeholders from industry, government agencies, regional and state regulators, research organizations, and academia to obtain input on the need for a private-partner research effort to address these emerging issues. A summary of the workshop proceedings can be found at www.netl.doe.gov/coalpower/environment. The workshop participants identified a number of near-, mid-, and long-term research opportunities directed at reducing the impact of coal power generation on water availability and quality.

In response, DOE-NETL is issuing a solicitation focused on four areas of interest related to coal-based electric utilities and water. Details concerning the solicitation are described below. This solicitation will serve to help ensure the continued availability of low-cost electricity from coal while meeting growing demands for clean water.

1.3 SOLICITATION OBJECTIVES (MAR 2001)

The objective of this solicitation is to receive applications for cost-shared research projects directed at innovative water management technologies and concepts for coal-fired electric utility boilers. Specifically, the solicitation will provide for the development of cost-effective solutions to emerging regulations and restrictions on water use and impacts on water quality associated with the generation of electricity by coal-fired power plants. All applications should clearly describe how a successful project will result in cost savings to operators and the magnitude of those savings relative to existing technology.

The solicitation supports the overall goal of the Department of Energy/Office of Fossil Energy’s Innovations for Existing Plants (IEP) Program to develop advanced technology and knowledge products

that enhance the environmental performance of the existing fleet of coal-fired power plants. The solicitation is part of the path forward of the Energy-Water Management component of the IEP roadmap. The IEP roadmap can be found at www.netl.doe.gov/coalpower/environment. The goal of this research is two fold: (1) reduce water consumption per kWh of electricity produced by 25% by 2010, and (2) reduce impacts of electricity production on water quality.

The applications will be for applied research at the bench-scale to field-scale level for time periods from one to three years. Applications in the following four topic areas are requested:

Topic 1: Non-Traditional Sources of Process and Cooling Water (DE-PS26-03NT41719-1)

Applications are being sought to evaluate and develop cost-effective approaches to using non-traditional (i.e., not from a freshwater or saline surface water supply) sources of water for cooling and other power plant needs. Examples include surface and underground mine pool water, coal-bed methane produced water, and industrial and/or municipal wastewater. The technical, cost, and permitting issues associated with collecting, treating, transporting, storing, and discharging/disposing of these non-traditional waters should be considered.

Topic 2: Innovative Cooling Technology (DE-PS26-03NT41719-2)

Applications are being sought to improve both wet and dry recirculating cooling tower systems. Innovative methods of plume abatement are desired to reduce water loss and minimize visual impacts from cooling towers. Improvements in the energy penalty associated with wet and dry cooling versus once-through cooling are also sought. Research to reduce the higher capital and operating costs associated with dry cooling versus wet cooling and the development of hybrid wet-dry systems that optimize the advantages of wet and dry cooling towers is also sought.

Topic 3: Advanced Cooling Water Intake Technology (DE-PS26-03NT41719-3)

Future regulations to protect aquatic organisms under §316(b) of the Clean Water Act may impact the operation of cooling water intake structures on new and existing power plants. Applications are sought to meet performance standards for intake structures that would be required by §316(b) regulation. Specifically, advanced intake structure technologies such as intake screen systems, passive intake systems, diversion or avoidance systems, and fish handling systems are sought. Innovative methods to control bio-fouling of intake structures, which will be more of a problem with the lower intake water velocities required to reduce fish impingement, are also sought.

Topic 4: Advanced Pollutant Measurement and Treatment Technology (DE-PS26-03NT41719-4)

Future controls on the emission of mercury and possibly other hazardous air pollutants (e.g., selenium, arsenic) have raised concerns about the ultimate fate of these contaminants once they are removed from the flue gas. Preventing these air pollutants from being transferred to surface or ground waters will be critical. Applications are sought for advanced technologies to detect, measure, and remove mercury, arsenic, selenium and other pollutants from the aqueous streams of coal-based power plants such as blowdown water, wet scrubber effluents, and ash pond waters. Advanced technologies are also sought for removal of chemicals used in treatment of cooling water.

SECTION II-CONDITIONS AND NOTICES

2.1 APPLICANT ELIGIBILITY (MAY 2001)

Any nonprofit or for-profit organization, university or other institution of higher education, or non-federal agency or entity is eligible to apply, unless otherwise restricted by the Simpson-Craig Amendment which is defined as follows:

Organizations which are described in section 501(c)(4) of the Internal Revenue Code of 1986 and engage in lobbying activities after December 31, 1995, shall not be eligible for the receipt of Federal Funds constituting an award, grant, or loan. Section 501(c)(4) of the Internal Revenue Code of 1986 covers:

“Civic leagues or organizations not organized for profit but operated exclusively for the promotion of social welfare, or local associations of employees, the membership of which is limited to the employees of a designated person or persons in a particular municipality, and the net earnings of which are devoted exclusively to charitable, educational or recreational purposes.”

Lobbying activities are defined broadly to include, among other things, contacts on behalf of an organization with specified employees of the Executive Branch and Congress with regard to Federal legislative, regulatory and program administrative matters.

2.2 NUMBER AND TYPE OF AWARDS (JAN 2000)

It is anticipated that four to seven (4 to 7) projects will be selected. The Government reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this solicitation and will award that number of financial assistance instruments which serves the public purpose and is in the best interest of the Government. The Government intends to use financial assistance cooperative agreements as the type of award instrument(s).

2.3 COST SHARING REQUIREMENTS (DEC 1999)

In accordance with 10 CFR 600.30, the DOE has determined that a minimum private sector cost share for applications submitted under this solicitation is twenty percent (20%) of the total project value (NOT 20% of the DOE share) during each Budget Period. Cost sharing must meet the requirements of 10 CFR 600.123 and 10 CFR 600.224. Allowable costs for cost sharing shall be in accordance with 10 CFR 600.127 and 10 CFR 600.222.

2.4 AVAILABILITY OF FUNDS (AUG 1999)

DOE's budget includes approximately \$1.5 million for the current fiscal year for this Program Solicitation (PS). The proposed budget for this program over 2 years is \$3.5 million of DOE support.

2.5 PROJECT PERIOD (AUG 2000)

The Government anticipates the project period for the subject awards to be one to three (1 to 3) years. Awards will have project and budget periods that are specific to the project and funding.

2.6 REPORTING REQUIREMENTS (FEB 2001)

Reports identified in the Reporting Requirements Checklist of the model financial assistance agreement located at <http://www.netl.doe.gov/business/faapiaf/MODEL.PDF> are required to be submitted during performance of the award.

2.7 TIME, DATE AND PLACE APPLICATIONS ARE DUE IIPS (FEB 2002)

All applications shall be submitted in an electronic format through DOE's Industry Interactive Procurement System (IIPS) in accordance with the application preparation instructions contained in Section III of this solicitation

ALL APPLICATIONS MUST HAVE AN IIPS TRANSMISSION TIME STAMP OF NOT LATER THAN 2:00 PM EASTERN TIME ON FEBRUARY 14, 2003.

The only acceptable mode of application transmission is through IIPS. Applications submitted through the U.S. Postal Service, facsimile, telegraphically, courier companies, or hand-delivered hard copies will be considered non-responsive.

Applicants are advised to begin transmission 24 hours in advance of the deadline in order to prevent any transmission difficulties.

2.8 PROGRAM AREAS OF INTEREST (FEB 2001)

This solicitation contains multiple program areas of interest identified in the solicitation objectives. Applicants are cautioned that this solicitation is a master solicitation and that each program area of interest has its own program-specific solicitation number for submission of applications. For example, Program Area of Interest 1, Non-Traditional Sources of Process and Cooling Water has a solicitation number of DE-PS26-03NT41719-1. Applications cannot be submitted to the master solicitation.

Applicants should submit their application under the program area which best fits the majority of the effort to be performed. If an application is submitted under a program area of interest in which the DOE believes fits more appropriately in another program area of interest, the applicant will be directed to resubmit under the appropriate area of interest. Do not submit an identical application under more than one area of interest.

There is no limitation on the number of different applications an applicant may submit. However, a separate application must be submitted for each Program Area of Interest for which the applicant is interested in receiving an award. Each application must be complete and shall not rely upon another application for submission of the required documents.

2.9 LATE APPLICATIONS, AMENDMENTS AND WITHDRAWALS OF APPLICATIONS -- IIPS (JAN 2001)

An application or amendment of an application shall be timely if it is transmitted through IIPS, and the date/time of the transmission indicated by IIPS is on or before the closing date(s) indicated above.

Applications or amendments of applications may be withdrawn by written notice by an authorized representative to the Contract Specialist via E-mail or by contacting the IIPS HELP Desk. A second application or amendment may then be submitted. The second or subsequent application must be submitted before the closing date to be considered.

In the event that two or more applications are received for the same project with the same file name, the application with the latest transmission time stamp will be considered for review. Therefore, it is important that you not merely make page changes and resubmit portions of the application that are amended. A complete amended application must be sent. Contact the IIPS HELP Desk for assistance.

2.10 ANTICIPATED SELECTION AND AWARD DATES (AUG 1999)

It is anticipated that selections for award will be made on or before May 30, 2003. Awards are expected to be made within ninety (90) calendar days following selection.

2.11 CONTENT OF RESULTING AWARD (NOV 2000)

Any agreement awarded as a result of this solicitation will contain the applicable terms and conditions found in the Model Financial Assistance Agreement located at the NETL Website located at:

<http://www.netl.doe.gov/business/faapiaf/MODEL.PDF>

Blank areas appearing in the model agreement indicated by "[]" will be completed after negotiations.

2.12 APPLICATION PREPARATION COSTS (DEC 1999)

This solicitation does not obligate the Government to pay any costs incurred in the preparation and submission of applications, or in making necessary studies or designs for the preparation thereof or to acquire, or contract for any services.

2.13 COMMITMENT OF PUBLIC FUNDS (AUG 1999)

The Contracting Officer is the only individual who can legally commit the Government to the expenditure of public funds in connection with the proposed award. Any other commitment, either explicit or implied, is invalid.

2.14 FALSE STATEMENTS (AUG 1999)

Applications must set forth full, accurate, and complete information as required by this solicitation. The penalty for making false statements in applications is prescribed in 18 U.S.C. 1001.

2.15 QUESTIONS/AMENDMENTS TO SOLICITATION -- IIPS (NOV 2001)

All requests for explanation or interpretation of any part of the solicitation shall be submitted through the “Submit Question” feature in IIPS. Once a question is submitted, it can not be edited. Questions submitted as well as the government’s response to these questions may be viewed by using the “View Questions” feature in IIPS. The Government reserves the right not to respond to questions submitted by telephone, E-mail or in person at any time.

The only method by which any term of this solicitation may be amended is by an express, formal amendment generated by the issuing office and disseminated through IIPS. No other communication, whether written or oral will amend or supersede the terms of this solicitation.

Applicants are encouraged to periodically check IIPS to ascertain the status of any amendments and review the answers to questions as hard copies will not be distributed. Applicants are encouraged to click on the “Join Solicitation Mailing List” link if they would like to receive e-mail notifications on updates and/or modifications to the specified solicitation.

2.16 CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER (CFDA) (DEC 2000)

81.089, Fossil Energy Research and Development.

The Applicant should put this CFDA number in Block 10 of the Standard Form 424, Application for Federal Assistance.

2.17 PARTICIPATION BY FEDERAL ORGANIZATIONS OR FEDERALLY AFFILIATED ORGANIZATIONS (MAR 2002)

Applications submitted by, or on behalf of: (1) a Federal agency; (2) a Federally Funded Research and Development Center (FFRDC), or (3) a Department of Energy (DOE) Management and Operating (M&O) contractor will not be eligible for an award under this solicitation. However, these organizations may be proposed as team members subject to the following guidelines.

- (a) For DOE M&O contractors, the proposed use of such entity must be authorized in writing by the DOE Contracting Officer or authorized designee responsible for managing the M&O Contractor. The applicant must also provide any additional submission requirements identified in Section 3- Application Preparation Instructions for Volume I - Offer and Other Documents Preparation Instructions, of this solicitation. The DOE Contracting Officer responsible for managing the M&O Contractor must determine that performance by the M&O contractor: (1) is consistent with or complementary to DOE missions and the missions of the facility to which the work is to be assigned; (2) will not adversely impact execution of assigned programs of the facility; (3) will not place the facility in direct competition with the domestic private sector; and (4) will not create a

detrimental future burden on DOE resources. DOE will make award to the applicant for the applicant's portion of the effort. For the M&O effort, DOE shall fund the work, in whole or in part, through a DOE field work proposal to the M&O contractor. If DOE funds a portion of the M&O effort, then the Recipient is responsible for funding the remaining portion of the effort through a Cooperative Research & Development Agreement (CRADA) or a service agreement utilizing their own funds.

- (b) For FFRDC contractors (other than a DOE M&O contractor), the proposed use of such entity must be consistent with the FFRDC's authority under its contract with the cognizant Federal agency and such work must not place the FFRDC in direct competition with the private sector. DOE shall fund the FFRDC work through an interagency agreement with the cognizant Federal agency.
- (c) For Federal agencies, the proposed effort must not place the agency in direct competition with the private sector. DOE shall fund the other agency work through an interagency agreement.
- (d) An applicant's cost sharing requirement shall be based on the total cost of the project, including the applicant's and the Federal agency, FFRDC and M&O's portions of the effort.
- (e) The estimated total cost of the Federal agency, FFRDC or M&O contractor(s) work, in the aggregate, shall not exceed twenty-five percent (25%) of the total estimated project cost.

2.18 DETERMINATION OF RESPONSIBILITY (JAN 2001)

DOE will evaluate the potential Recipient's responsibility before award. Responsibility determinations are focused on the Recipient's capability to manage and account for the funds, property and other assets provided and to perform satisfactorily under the terms of the award. If a potential Recipient is determined to not be in compliance or cannot or will not comply with generally applicable requirements (see 10 CFR Part 600, Appendix A), the contracting officer will find the Recipient not responsible and may either disapprove the application or use special restrictive conditions as a term of award.

2.19 EVALUATION PERSONNEL (AUG 2000)

Applications will be evaluated in accordance with the criteria set forth in Section IV of the solicitation. In conducting this evaluation, the Government may utilize personnel from other Federal Agencies and the private sector. **APPLICANTS NOT WISHING TO HAVE THEIR APPLICATION EVALUATED BY NONFEDERAL PERSONNEL SHALL INDICATE THEIR "NON-CONSENT" IN VOLUME I.** Applicants are further advised that DOE may be unable to consider an application withholding such consent.

When using personnel from other Federal agencies or the private sector, DOE will obtain assurances from all evaluators that DOE's commitments are met relating to the proprietary nature of any application information.

2.20 APPLICATION CLARIFICATION (JULY 1999)

DOE reserves the right to require applications to be clarified or supplemented through additional written submissions or oral presentations.

2.21 APPLICATION ACCEPTANCE PERIOD (AUG 1999)

The minimum application acceptance period shall be 180 calendar days after the deadline(s) for receipt of applications.

2.22 AWARD WITHOUT DISCUSSIONS (AUG 2000)

Notice is given that award may be made after few or no exchanges, discussions or negotiations. Therefore, all applicants are advised to submit their most favorable application to the Government. The Government reserves the right, without qualification, to reject any or all applications received in response to this

solicitation and to select any application, in whole or in part, as a basis for negotiation and or award.

2.23 PRESUBMISSION REVIEW AND CLEARANCES (AUG 1999)

Presubmission review under Executive Order 12372, "Intergovernmental Review of Federal Programs" is not required.

2.24 LOANS NOT AVAILABLE (JULY 1999)

Loans are not available under the DOE Minority Economic Impact (MEI) loan program, 10 CFR Part 800, to finance the cost of preparing a financial assistance application.

2.25 52.227-6 ROYALTY INFORMATION. (APR 1984)

(a) *Cost or charges for royalties.* When the response to this solicitation contains costs or charges for royalties totaling more than \$250, the following information shall be included in the response relating to each separate item of royalty or license fee:

- (1) Name and address of licensor.
- (2) Date of license agreement.
- (3) Patent numbers, patent application serial numbers, or other basis on which the royalty is payable.
- (4) Brief description, including any part or model numbers of each contract item or component on which the royalty is payable.
- (5) Percentage or dollar rate of royalty per unit.
- (6) Unit price of contract item.
- (7) Number of units.
- (8) Total dollar amount of royalties.

(b) *Copies of current licenses.* In addition, if specifically requested by the Contracting Officer before execution of the contract, the offeror shall furnish a copy of the current license agreement and an identification of applicable claims of specific patents.

2.26 952.227-84 NOTICE OF RIGHT TO REQUEST PATENT WAIVER. (FEB 1998)

Offerors have the right to request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of the contract that may be awarded as a result of this solicitation, in advance of or within 30 days after the effective date of contracting. Even where such advance waiver is not requested or the request is denied, the contractor will have a continuing right under the contract to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the contract. Domestic small businesses and domestic nonprofit organizations normally will receive the patent rights clause at DEAR 952.227-11 which permits the contractor to retain title to such inventions, except under contracts for management or operation of a Government-owned research and development facility or under contracts involving exceptional circumstances or intelligence activities. Therefore, small businesses and nonprofit organizations normally need not request a waiver. See the patent rights clause in the draft contract in this solicitation. See DOE's patent waiver regulations at 10 CFR part 784.

2.27 INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM (MAR 2001)

(a) PATENT RIGHTS

The government will have certain rights in all subject inventions. A subject invention is one which is conceived or first actually reduced to practice under a DOE award. This may include inventions that have been patented prior to the award of the contract, if the invention is first actually reduced to practice under the contract. The statutes defining the government's rights are found at 35 U.S.C. §§ 200 to 212, <http://www4.law.cornell.edu/uscode/> and the regulations are found at 10 CFR 927.3 <http://www.access.gpo.gov/nara/cfr/index.html>. The following is a general discussion, which is not exhaustive and so should not be relied on as legal advice. Review the statutes and regulations referenced above, and the clauses referenced below for a more complete explanation.

If the contractor or subcontractor is a domestic small business firm or non-profit organization, the clause at 48 CFR 952.227-11 applies. Under this clause, the contractor will have the first option to elect to retain title to any subject invention. However, the government retains certain rights such as march-in rights, U.S. preference, and government-use license.

If the contractor or subcontractor does not qualify as a domestic small business firm or non-profit organization, the clause at 48 CFR 952.227-13 applies. Under this clause, the government takes title to any subject invention and the contractor gets a revocable, nonexclusive, royalty free license. However, the contractor can petition the Department of Energy (DOE) for a waiver of patent rights. A minimum of 20% cost sharing is usually required for an advance patent waiver, and the DOE retains some rights in the invention such as march-in rights, US competitiveness, and government use license. The DOE waiver regulations are found at 10 CFR 784.

(b) RIGHTS TO TECHNICAL DATA

Pursuant to 48CFR 52.227-14 and 52.227-16, the Government has unlimited rights in technical data created under the agreement. Delivery or licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in a particular agreement or as may be negotiated as a condition of a patent waiver to insure continued development toward commercialization of an invention arising under a DOE agreement.

In this program, it is anticipated that DOE will be able to withhold certain technical data created under the program for up to five (5) years from the time it is created under The Energy Policy Act of 1992 (42 U.S.C §13541(d)). See the Act for a definition of the type of data that may be protected from public disclosure. The decision to include this provision in individual awards will be made on a case-by-case basis for each agreement considering the technology involved, etc. After the five (5) year time period expires, such data is subject to release if it is a Government record.

2.28 NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES (AUG 1999)

Eligible activities under this program include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those which encourage or support political activities such as the collection and dissemination of information related to potential, planned or pending legislation.

2.29 SF-424 APPLICATION FOR FEDERAL ASSISTANCE, STANDARD INFORMATION

For the applicant's convenience, the following general instruction is being provided for use by all applicants in completing the SF-424 to be submitted with their response to this solicitation:

SF-424, Application for Federal Assistance

- | | |
|----------|--|
| Block 1. | Type of Submission, mark 'non-construction' |
| Block 6. | Type of Application, mark 'new' |
| Block 9. | Name of Federal Agency, indicate 'U.S. Department of Energy' |

Block 10. Catalog of Federal Domestic Assistance Number and Title, indicate "81-089".
Block 16. Is application subject to review..., mark 16.b. 'no' - program is not covered by
E.O 12372.

The remainder of the SF 424 requires applicant/project specific information to be completed by the offeror.

SECTION III -APPLICATION PREPARATION INSTRUCTIONS

3.1 IIPS APPLICATION PREPARATION INSTRUCTIONS - GENERAL (MAY 2002)

The application shall be prepared as set forth herein to provide a standard basis for evaluation and to insure that each application will be uniform as to format and sequence.

Applicants are advised that the submission of your application in an electronic format is required utilizing the Industry Interactive Procurement System (IIPS) through the Internet at <http://e-center.doe.gov/> . IIPS provides the medium for disseminating solicitations, receiving applications, and evaluating applications in a paperless environment. Individuals who have the authority to enter their company into a legally binding contract and intend to submit applications via the IIPS system must register and receive confirmation that they registered prior to being able to submit an application on the IIPS System. An IIPS "User Guide for Contractors" can be obtained by going to the IIPS Homepage at <http://e-center.doe.gov> and then clicking on the "Help" button. Questions regarding the operation of IIPS may be E-mailed to the IIPS Help Desk at IIPS_HelpDesk@e-center.doe.gov or call the Help Desk at (800) 683-0751.

During review of the complete application, DOE may request the submission of additional information if the information is essential to evaluate the application.

3.2 OVERALL ARRANGEMENT OF APPLICATION (MAR 2002)

The overall application shall consist of three (3) physically separated volumes, individually entitled as stated below and submitted through IIPS at <http://e-center.doe.gov>.

APPLICATION VOLUME -- TITLE
Volume I -- Offer and Other Documents
Volume II -- Technical Application
Volume III -- Cost Application

All forms and instructions needed for preparation of each volume are found on the NETL homepage at: <http://www.netl.doe.gov/business/faapiaf/main.html>. Instructions for completion of the forms are contained on the back of each form. Questions on completion of the forms should be addressed to the Contract Specialist.

In order for a complete application package to be received correctly through IIPS, offerors are advised to download all files needed for transmission from the NETL homepage and complete all volumes entirely prior to initiating transmission through IIPS. Submission of all required volumes must be performed at the same time and from the same computer. Submission of volumes at different times or from different computers may separate the volumes and make it difficult to determine the applicant's responsiveness to the requirements.

3.3 FILE FORMAT (NOV 2001)

To aid in evaluation, applications shall be clearly and concisely written as well as being neat, indexed (cross-indexed as appropriate), and logically assembled. All pages of each part shall be appropriately numbered, and identified with the name of the applicant, the date, and the solicitation number to the extent practicable.

Application files are to be formatted in one of the following software applications: Adobe Acrobat PDF (Version 4.0 or lower), Word (97), or WordPerfect (Version 10 or lower).

Files shall be saved with filenames which clearly identify the file being submitted. Filename extensions shall clearly indicate the software application used for preparation of the documents, i.e. .wpd, .doc, .pdf, .xls.

In order to create PDF documents, complete the fillable PDF forms, save them, and/or electronically transmit them to DOE, the full version of Adobe Acrobat must be acquired. Information regarding Adobe Acrobat software can be obtained from Adobe Systems, Inc. at <http://adobe.com>.

3.4 **SIGNED ORIGINALS (NOT REQUIRED)**

Submission of electronic proposals via IIPS will constitute submission of signed copies of the required documents. The name of the applicant's authorized official shall be entered (typed or electronic signature) in the appropriate space shown on the form(s).

3.5 **VOLUME I -- OFFER AND OTHER DOCUMENTS PREPARATION INSTRUCTIONS (JAN 2002)**

When the applicant begins to "Create Proposal" under the proper Technical Area of Interest, the applicant will complete the required fields and attach the following files to the link identified as: Attach Volume I/Offer or Other Document. For consistency, the applicant is instructed to use the file names specified below. Filename extensions shall clearly indicate the software application used for preparation of the documents, i.e., ".wpd" for WordPerfect, ".pdf" for Adobe Acrobat, or ".doc" for Word files:

| | MANDATORY FILE | FILENAME |
|--------|--|--------------|
| File 1 | Volume 1, Application Cover Sheet | V1_COVER.--- |
| File 2 | SF 424, Application for Federal Assistance | 424.--- |
| File 3 | SF424b, Assurances, Non-Construction Programs | 424b.--- |
| File 4 | D1600.5, Assurance of Compliance | 1600_5.--- |
| File 5 | Certifications Regarding Lobbying; Debarment, Suspension and Other Responsibility Matters; and Drug-Free Work Place Requirements | CERT_LLD.--- |
| File 6 | Representation of Limited Rights Data and Restricted Computer Software | PATENT.--- |
| File 7 | NEPA Environmental Questionnaire | NEPASOL.--- |

In the event that the applicant takes exceptions or deviations are taken to the Model Agreement or other portions of this solicitation, these exceptions/deviations shall be clearly labeled and stated on the continuation page of File 1, Application/Proposal Cover Sheet (form NETL F 540.1-2).

3.6 **VOLUME II-- TECHNICAL APPLICATION PREPARATION INSTRUCTIONS - IIPS (NOV 2001)**

When the Applicant begins to "Create Proposal" under the proper Technical Area of Interest, the Applicant will create an IIPS cover page and attach the required files to the link identified as: Attach Volume 2/ Technical Proposal. Filename extensions shall clearly indicate the software application used for preparation of the documents, i.e., ".wpd" for WordPerfect, ".pdf" for Adobe Acrobat, or ".doc" for Word files:

For consistency, the applicant is instructed to use the mandatory file names shown below. The applicant must complete all files entirely, prior to initiating transmission through IIPS. All 4 files must be submitted together and at one time from the same computer.

| | MANDATORY FILE | FILENAME |
|--------|--|-----------------|
| File 1 | Public Abstract | ABSTRACT.--- |
| File 2 | Cover Page and Technical Discussion* | TECHNICAL.--- |
| File 3 | Resumes of Key Personnel, Publications, and/or Letters of Commitment, if applicable. | ATTACHMENTS.--- |
| File 4 | Statement of Project Objectives | OBJECTIVES.--- |

***NOTE: TECHNICAL DISCUSSION IS LIMITED TO 25 DOUBLE-SPACED PAGES, (EXCLUDING COVER PAGE)**

FILE 1 PUBLIC ABSTRACT

This file shall contain a public abstract of not more than one (1) single spaced typewritten page clearly stating the objectives of the proposed research, the title of the project, methodology, and sponsoring organization(s). It is a stand alone document. The Applicant shall provide a point of contact for coordination, preparation and distribution of press releases in this abstract. This abstract may be released to the public by DOE in whole or in part at any time. It is, therefore, required that it shall not contain proprietary data or company sensitive business information.

FILE 2 COVER PAGE AND TECHNICAL DISCUSSION

This file shall include a cover page indicating the solicitation number, name and address of the Applicant, point of contact, telephone/FAX number/E-Mail address, title of project, and date of application. **The technical discussion shall not exceed twenty-five (25) pages, double-spaced, using 10 point font or equivalent, 1" margins, and when printed will fit on size 8 1/2" by 11" paper.**

APPLICANTS ARE CAUTIONED THAT EVALUATORS SHALL BE INSTRUCTED TO DISREGARD ANY PAGES DEEMED TO BE IN EXCESS OF THE 25-PAGE LIMIT SPECIFIED HEREIN.

The technical application will consist of the Applicant's outline addressing the technical and management aspects of the assistance action, the Applicant's capabilities and what the Applicant will do to satisfy the requirements of the solicitation. Since the technical information contained in this section will be evaluated to determine such matters as understanding of the work to be performed, technical approach, and potential for completing the desired work, it should be specific and complete in every detail. The Application should be practical and be prepared simply and economically, providing a straightforward, concise delineation of what it is the Applicant will do to satisfy the requirements of the solicitation.

To help facilitate the review process and to insure all the review criteria are addressed, the applicant shall use the following format when preparing the technical discussion. This format relates to the technical evaluation criteria found in Section IV.

All applicants, at a minimum, must provide the following information:

I. Scientific and Technical Merit

The applicant shall provide a discussion which clearly delineates the scientific and technical merit of the technology to be developed. The application shall discuss:

- (1) How the proposed work relates to the "Research Objectives for This Solicitation" in the targeted Area of Interest.
- (2) How the proposed work will result in improvements over existing technologies.
- (3) The degree to which the proposed work identifies and/or makes progress on new concepts. The likelihood of developing a new successful technology.
- (4) The scientific and technical basis and merit of the proposed work.
- (5) Anticipated benefits of the proposed work, such as performance improvements, cost savings, and environmental benefits.
- (6) The feasibility of the proposed concept.

II. Technical Approach and Understanding

The applicant shall provide a clear description of the technical approach that will be implemented to accomplish the project objectives, to include a description of potential obstacles to meeting project goals and mechanisms for mitigating potential problems. For multi-budget period projects, the applicant shall

define the phases and criteria for determining successful completion of each budget period. The application shall include:

- (1) A narrative description of the planned work for each annual budget period. This description should be an expanded version of the Statement of Project Objectives and use the headings contained therein (e.g., Objectives, Scope of Work, Tasks to be Performed). It should be written in the active voice using consistent wording that divides the work into logical tasks and subtasks necessary to accomplish the project objectives. The applicant shall provide a clear description of the work to be performed under each task and subtask. The description shall identify the product(s) and deliverables that will result from each task and its relation to the overall project. The description of the planned work shall contain necessary and sufficient information to estimate the cost of the work being proposed.
- (2) Labor hours and justification. The applicant shall provide a table listing the estimated labor hours and labor categories, e.g. project manager, principal investigator, engineering, technician, scientific, clerical) required for each task in the Statement of Project Objectives. The applicant shall include a table showing labor hours and labor categories for any proposed subcontracting or consulting effort for each task. These categories should be easily cross-referenced with the key personnel identified above.
- (3) A project schedule and milestones, and a description of the interrelationships of the project tasks. All significant milestones shall be defined in a milestone log and depicted on the project schedule.
- (4) A discussion of proposed travel. The purpose of the trip, number of trips, the origin and destination, trip duration and the number of personnel shall be included in the explanation.
- (5) A discussion of the extent of prior use, research, development or application of the proposed technology and appropriateness of how the prior work relates to the proposed application of the technology

III. Technical and Management Capabilities

This section shall describe proposed teaming arrangements, if applicable; the applicant's understanding and ability to meet the goals and objectives of the proposed work; and demonstrate the applicant's understanding of the DOE's objectives as set forth in the solicitation. The application shall include:

- (1) A brief discussion of the credentials, capabilities, and experience (technical and managerial) of all organizations involved in the work effort
- (2) The credentials, capabilities, experience (technical and managerial) and availability of the key personnel to be assigned to the project. The roles of the key personnel and the percentage of time being devoted to the project should be clearly identified. Resumes of key personnel shall be included in File 3.
- (3) A description of the project organization, structure and diversity of participants (diversity refers to business size and type, e.g., corporation, non-profit, not-for-profit, small business, university, etc.) with responsibilities and lines of authority, both technical and administrative, of the participating organizations and key personnel as they relate to the tasks and subtasks in the Statement of Project Objectives. A letter of commitment from each participating organization shall be included in File 4, detailing their level of effort and any cost share.
- (4) A description of any prior experience in managing projects of similar type, size and complexity.
- (5) A description of the type, quality, availability, and appropriateness of the facilities, equipment and materials to be utilized in carrying out the proposed work.

FILE 3 RESUMES OF KEY PERSONNEL, PUBLICATIONS, AND/OR LETTERS OF COMMITMENT, IF APPLICABLE

This file shall contain resumes of key personnel, qualifications and experience of participating organizations, additional pertinent publications, letters of commitment, etc.

FILE 4 STATEMENT OF PROJECT OBJECTIVES

The Department of Energy's National Energy Technology Laboratory uses a specific format for Statement of Project Objectives in its awards. In solicitations such as this one, where the Government does not

provide a Statement of Project Objectives, the Applicant is to provide one, which the DOE will then use to generate the Statement of Project Objectives to be included in the award. Several specific tasks have also been provided in the following format for the Applicant to insert into the Statement of Project Objectives at the appropriate location.

All applications must contain a single, detailed Statement of Project Objectives that addresses how the project objectives will be met. The Statement of Project Objectives must contain a clear, concise description of all activities to be completed during project performance and follow the structure discussed below. The Statement of Project Objectives may be released to the public by DOE in whole or in part at any time. It is therefore required that it shall not contain proprietary or confidential business information.

The Statement of Project Objectives is generally less than 10 pages in total for the proposed work. Applicants shall prepare the Statement of Project Objectives in the following format:

TITLE OF WORK TO BE PERFORMED

(Applicant : Insert the title of work to be performed. Be concise and descriptive.)

A. OBJECTIVES (To Be Completed By Applicant)

Include one paragraph on the overall objective(s) of the work. Also, include objective(s) for each phase of the work.

B. SCOPE OF WORK (To Be Completed By Applicant)

This section should not exceed one-half page and should summarize the effort and approach to achieve the objective(s) of the work for each Phase.

C. TASKS TO BE PERFORMED (To Be Completed By Applicant)

Tasks, concisely written, should be provided in a logical sequence and should be divided into the phases of the project. This section provides a brief summary of the planned approach to this project.

BUDGET PERIOD I

Task 1.0 - (Title)

(Description)

Subtask 1.1 (Optional)

(Description)

Task 2.0 - (Title)

BUDGET PERIOD II

BUDGET PERIOD III

D. DELIVERABLES

The periodic, topical, and final reports shall be submitted in accordance with the attached "Federal Assistance Reporting Checklist" and the instructions accompanying the checklist.

The Recipient shall provide a list of deliverables* other than those identified on the “Federal Assistance Reporting Checklist” that will be delivered, if applicable. These deliverables shall also be identified within the text of the Statement of Project Objectives.

1. Task 1.1 - (Deliverable Description)
2. Task 2.2 - (Deliverable Description)

*Note to Applicant: In this context, an example of a "deliverable" may be a "feasibility study", "conceptual design report", a "topical report" to be prepared on a specific aspect of the SOPO, etc.

E. BRIEFINGS/TECHNICAL PRESENTATIONS (If applicable)

The Recipient shall prepare detailed briefings for presentation to the COR at the COR’s facility located in Pittsburgh, PA or Morgantown, WV.

- * Project Kick-Off Meeting. A “kick-off” meeting shall be held within sixty (60) days after issuance of award.
- * Semi-Annual Briefings. Project status briefings shall be provided semi-annually by the Recipient to explain the plans, progress, and results of the technical effort.
- * Annual Contractor’s Review Meeting/Presentations. The Recipient shall provide and present a technical paper(s) at the DOE/NETL Annual Contractor’s Review Meeting to be held at the NETL facility located in Pittsburgh, PA or Morgantown, WV.

3.7 **TREATMENT OF PROPRIETARY INFORMATION (AUG 1999)**

An application may include technical data and other data, including trade secrets and/or privileged or confidential commercial or financial information, which the applicant does not want disclosed to the public or used by the Government for any purpose other than application evaluation. To protect such data, **the applicant should specifically identify each page including each line or paragraph thereof containing the data to be protected and mark the cover sheet of the application with the following Notice as well as referring to the Notice on each page to which the Notice applies:**

NOTICE OF RESTRICTION ON DISCLOSURE AND USE OF DATA

The data contained in pages [] of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award as a result of or in connection with the submission of this application, DOE shall have the right to use or disclose the data therein to the extent provided in the award. This restriction does not limit the Government’s right to use or disclose data obtained without restriction from any source, including the applicant.

DOE shall not refuse to consider an application solely on the basis that the application is restrictively marked.

3.8 **VOLUME III-- COST APPLICATION PREPARATION INSTRUCTIONS - IIPS (JAN 2002)**

When the Applicant begins to “Create Proposal” under the proper Technical Area of Interest, the Applicant will complete the fields on the cover page and attach the following files to the link identified as: Attach Volume 3/Cost Proposal. For consistency, the applicant is instructed to use the file names specified below,. Filename extensions shall clearly indicate the software application used for preparation of the documents , i.e, “.wpd” for WordPerfect, “.pdf” for Adobe Acrobat, or “.doc” for Word files:

| | MANDATORY FILE | FILENAME |
|--------|-------------------------------------|--------------|
| File 1 | Volume III, Application Cover Sheet | V3_COVER.--- |
| File 2 | Budget Forms | 4600_4.--- |
| File 3 | Supporting Cost Detail | DETAIL.--- |

3.9 APPLICATION SUBMISSION REQUIREMENTS FOR PARTICIPATING DOE M&O CONTRACTORS, NON-DOE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS (FFRDC'S) OR FEDERAL AGENCIES (MARCH 2002)

In addition to the application information to be provided by the applicant as set forth in other parts of this Section, the following additional requirements are required if your application includes work to be performed by a DOE M&O contractor, Non-DOE FFRDC, or Federal agency:

1. Justification

a. For participation by a DOE M&O contractor, authorization is required from the DOE Contracting Officer. The applicant must submit a document from the DOE Contracting Officer or authorized designee stating that the DOE M&O contractor is authorized to participate in the proposed work effort.

b. For FFRDC contractors (other than DOE M&O contractors), the proposed use of such entity must be consistent with the FFRDC authority under its contract with the cognizant Federal agency and such work must not place the FFRDC in direct competition with the private sector.

c. For Federal agencies, the proposed effort must not place the agency in direct competition with the private sector. DOE will fund the other agency work through an interagency agreement.

2. Work-Scope

The application must provide a scope of work for the effort to be performed by the applicant and a separate scope of work for the effort to be performed by the DOE M&O contractor, FFRDC, or Federal agency. If the applicant is teaming with a DOE M&O contractor, see DOE Order 412.1-Work Authorization System (<http://www.directives.doe.gov/>) for further submission instructions regarding Field Work Proposals, which is the vehicle used to fund the DOE M&O contractor.

3. Cost Information

In addition to the Application for Federal Assistance (SF 424), the application must include a budget page with cost information for that portion of the applicant's effort in the project and for the DOE M&O, FFRDC or Federal agencies' portion of the project. The cost information should be submitted in the same format and level of detail as prescribed under Volume III-Cost Application (NETL Business Internet link accessed at <http://www.netl.doe.gov/business/index.html>) for the purposes of evaluation. An applicant's cost sharing requirement shall be based on the total cost of the project, including the applicant, FFRDC, DOE M&O or Federal agencies' portions of the effort.

4. Teaming Agreement

The managerial arrangement between the applicant and the DOE M&O contractor, FFRDC or Federal agency.

DOE will review the application to determine that it meets these criteria and reserves the right to reject any application that fails to do so.

3.10 UNNECESSARILY ELABORATE APPLICATIONS (SEPT 2000)

Unnecessarily elaborate applications beyond those sufficient to present a complete and effective response to this solicitation are not desired. Elaborate art work and expensive visual presentations are neither necessary nor wanted.

SECTION IV - EVALUATION AND SELECTION

4.1 INTRODUCTION (MAY 2000)

This section contains the evaluation approach as well as the individual criteria to be used in the evaluation of applications.

4.2 GENERAL (JULY 1999)

It is the policy of DOE that any financial assistance be awarded through a merit-based selection process which means a thorough, consistent and independent examination of applications based on pre-established criteria by persons knowledgeable in the field of the proposed project.

4.3 PRELIMINARY REVIEW (FEB 2001)

Prior to a comprehensive evaluation, applications will undergo an initial review to determine whether the information required by the solicitation has been submitted and is properly completed. Applications will be reviewed for relevance to the Office of Fossil Energy's Innovations for Existing Plants (IEP) Program and for responsiveness to the requirements of the solicitation. Solicitations that require cost-sharing will be reviewed to insure that this requirement has been met. Volume I of the application will be reviewed to assess the Applicant's eligibility under the lobbying, EPA Act and Simpson-Craig Amendment requirements, as applicable. Failure to successfully meet any one of these preliminary review criteria may result in the elimination of the application and no further consideration in the Comprehensive Evaluation. In the event that an application is eliminated, a notice will be sent to the Applicant stating the reason(s) that the application will not be considered for financial assistance under this solicitation.

4.4 COMPREHENSIVE EVALUATION (AUG 1999)

Applications passing the preliminary evaluation shall be subject to a comprehensive evaluation in accordance with the technical evaluation criteria listed in this section.

The technical evaluation is conducted to determine the merits of the technical application with regard to the potential success of the project as well as future commercial applications. Comprehensive evaluation results in a numerical score for each application against each of the technical evaluation criteria.

The Environmental, Health, Safety, and Security (EHSS) Evaluation, which is not point scored, is conducted to determine the completeness of the Environmental Questionnaire, and to assess the applicant's awareness of EHSS requirements for mitigating project related EHSS risks and impacts.

The cost evaluation, which is not point scored, is conducted to determine the completeness of the cost estimate, appropriateness and reasonableness of the cost, and to assess the applicant's understanding of the Statement of Project Objectives.

4.5 TECHNICAL EVALUATION CRITERIA (AUG 1999)

Technical applications submitted in response to this solicitation will be evaluated and scored in accordance with the criteria listed below:

Criterion 1. Scientific and Technical Merit (45%)

Degree to which the proposed technology or methodology represents an important advancement toward achieving the objectives for this solicitation. Discussion of the overall problem being addressed and how the proposed project will solve or help solve the problem. The degree to which the proposed work identifies and/or makes progress on new concepts, thereby increasing the likelihood of a new successful technology. The degree to which the proposed work is based on sound scientific and engineering principles. Anticipated benefits of the proposed work. Feasibility of the proposed concept.

Criterion 2. Technical Approach and Understanding (35%)

Adequacy and feasibility of the applicant's technical approach. Appropriateness, rationale, and completeness of the proposed Statement of Project Objectives. Adequacy of the proposed project schedule, staffing plan and planned travel. Potential for success in terms of completion of project and its applicability for widespread usage

Criterion 3. Technical and Management Capabilities (20%)

Credentials, capabilities, and experience of key personnel. Demonstrated experience of the applicant and participating organizations in managing similar projects. Clarity, logic and likely effectiveness of the project organization, including subcontractors, to successfully complete the project. The adequacy of the facilities and equipment to perform project tasks.

4.6 COST EVALUATION CRITERIA (JULY 1999)

The costs proposed will be evaluated in response to this solicitation in order to:

- (a) determine the level of verifiable cost sharing;
- (b) ensure that all work elements included in the Statement of Project Objectives have associated costs, and that those cost appear appropriate and reasonable for the effort proposed; and
- (c) assess the applicant's understanding of the Statement of Project Objectives.

4.7 RELATIVE ORDER OF IMPORTANCE OF EVALUATION CRITERIA (NOV 2000)

The evaluation of the technical application will be conducted using preestablished weights to determine the relative merits of the application in accordance with the technical evaluation criteria. The technical evaluation (Volume II - Technical Application) represents 100% of the total evaluation scoring. Although Volume I and Volume III will not be point scored they will be considered in the selection decision and must be addressed.

The following weighting factors will be applied to each technical evaluation criteria to obtain a final evaluation rating for each application.

| | |
|--|-------------|
| <u>Criterion 1. Scientific and Technical Merit</u> | 45% |
| <u>Criterion 2. Technical Approach and Understanding</u> | 35% |
| <u>Criterion 3. Technical and Management Capabilities</u> | 20% |
| | 100% |

4.8 APPLICATION OF PROGRAM POLICY FACTORS (NOV 2000)

These factors, while not indicators of the Application's merit, e.g., technical excellence, cost, proposer's ability, etc., may be essential to the process of selecting the application(s) that, individually or collectively, will best achieve the program objectives. Such factors are often beyond the control of the Applicant. Applicants should recognize that some very good applications may not receive an award because they do not fit within a mix of projects which maximizes the probability of achieving the DOE's overall research and development objectives. Therefore, the following Program Policy Factors may be used by the Source Selection Authority (SSA) to assist in determining which of the ranked application(s) shall receive DOE funding support.

- 1. Desirability to optimize use of available funds by allowing more projects to be supported while not being detrimental to the overall objectives of the program.
- 2. Desirability to select projects that collectively represent diverse types and sizes of proposing organizations.

3. Desirability to select a project(s) for award that represents a diversity of technology concepts and applications, as well as technical approaches.
4. Desirability to select projects that collectively represent a diversity of types of products, carbonaceous feedstocks, and facilities including refineries, utilities, greenfields, etc.

The above factors will be independently considered by the SSA in determining the optimum mix of applications that will be selected for support. These policy factors will provide the SSA with the capability of developing, from the competitive solicitation, a broad involvement of organizations and organizational ideas, which both enhance the overall technology research effort and upgrade the program content to meet the goals of the DOE.

4.9 BASIS FOR SELECTION AND AWARD (MAY 2000)

The Department of Energy anticipates the award of one or more financial assistance instruments to those applicants whose applications are determined to be in the best interest of the Department in achieving the program objectives set forth in this solicitation. Selection of an application by the Department will be achieved through a process of evaluating and comparing the relative merits of the applicant's complete applications, in accordance with all of the evaluation factors set forth in this section.

This process reflects the Department's desire to accept an application based on its potential in best achieving program objectives, rather than solely on evaluated technical merit or cost. Accordingly, the Department of Energy may select for an award all, none, or any number or part, of an application, based on its decision as to which meritorious applications best achieve the program objectives set forth in this solicitation.

It is important for applicants to note that selection for negotiations will be made entirely on the basis of applications submitted. Applications should, therefore, address specifically the factors mentioned in the evaluation criteria, and not depend upon reviewers' background knowledge.